USDOT/PHMSA Multimodal Seminar

Transporting Hazardous Materials by Highway

FMCSA Responsibilities

- Motor Carrier Safety/HM Regulations and Enforcement
- Improving Commercial Motor Vehicle Safety
- Vehicle Inspections, Carrier Reviews, and Collection of Data on Violations
- HM Shipper/Cargo Tank Facility Inspections, Incident Investigations, and Data Collection
- Registration and Regulation of Household Goods Transportation
- R&D on Operational Safety of Commercial Vehicles and Carriers

FMCSA Jurisdiction

 The offering of hazardous materials for transportation and the transportation of hazardous materials in <u>interstate</u>, <u>intrastate and</u> <u>foreign commerce</u> by highway....



FMCSA Compliance & Enforcement Program

- HM Carriers
- HM Shippers
- Cargo tank inspection, test, repair and manufacturing facilities
- Registration of cargo tank facilities
- ◆ FMCSA HMSP Program
- PHMSA SP Program

Shipper Vs. Carrier Responsibilities

Shipper

- Classify hazmat
- Packaging
- Shipping papers, emergency info & phone #
- Communication: marking, labeling, Placarding
- Compatibility
- Blocking & bracing
- Shipper's certification

Carrier

- Shipping papers, emergency info & phone #
- Communication: marking and Placarding
- Loading and unloading
- Compatibility
- Blocking and bracing
- Shipper requirements when acting as an HM shipper & motor carrier

Shipper Vs. Carrier Responsibilities

If a carrier picks up a sealed trailer, do they have to verify the contents to ensure the shipping papers and placards are correct?

◆ YES. See 171.2(f)

The Shipper and Carrier are EQUALLY responsible for compliance!

Tank Endorsement Definition

- Changed in 2011 by CDL Learners Permit Rule
- ◆ Tank vehicle means any commercial motor vehicle that is designed to transport any liquid or gaseous materials within a tank or tanks having an individual rated capacity of more than 119 gallons and an aggregate rated capacity of 1,000 gallons or more that is either permanently or temporarily attached to the vehicle or the chassis.

A commercial motor vehicle transporting an empty storage container tank, not designed for transportation, with a rated capacity of 1,000 gallons or more that is temporarily attached to a flatbed trailer is not considered a tank vehicle.

Tank Endorsement Definition

Excludes small cargo tanks.

Includes van trailers with IBCs or portable tanks.

Incident Reporting

- ◆ 171.15 requires immediate notice by telephone of certain incidents.
 - Any fatality; Any injury requiring hospitalization; public evacuations of over 1 hour; freeway shutdown for over 1 hour; additional specific HM incidents.
- 171.16 requires written report within 30 days of any unintentional release.

Incident Reporting

◆ Form F5800.1

Electronic filing option

 Applies to whoever is in possession of the HM at the time of the incident

Incident Reporting Unintentional Release

- The escape of a HM from a package on an occasion not anticipated or planned.
- This includes releases resulting from collision, package failures, human error, criminal activity, negligence, improper packing, or unusual conditions (ex: over pressurization of package)

Incident Reporting

- Must report <u>non-release</u> incidents involving cargo tanks where:
 - There is structural damage to the lading retention system; or
 - Damage that requires repair to a system intended to protect the lading retention system.

Incident Reporting Undeclared Shipment

- A material subject to any of the hazard communication requirements (shipping papers, marking, labeling, placarding); and
- Offered for transportation in commerce without any visible indication to the person accepting the HM for transportation that a HM is present.

Incident Reporting Exceptions

- ORM-D materials; or
- PGIII material in Class or Division 3,4,5,6.1,8 or 9;
- Packaging having a capacity of less than 20 liters for liquids, 30kg for solids; AND
- ◆ Total aggregate release is less than 20 liters (5.2 gallons) for liquids, less than 30 kg (66 lbs.) for solids.
- This exception <u>not valid</u> for Haz Waste.

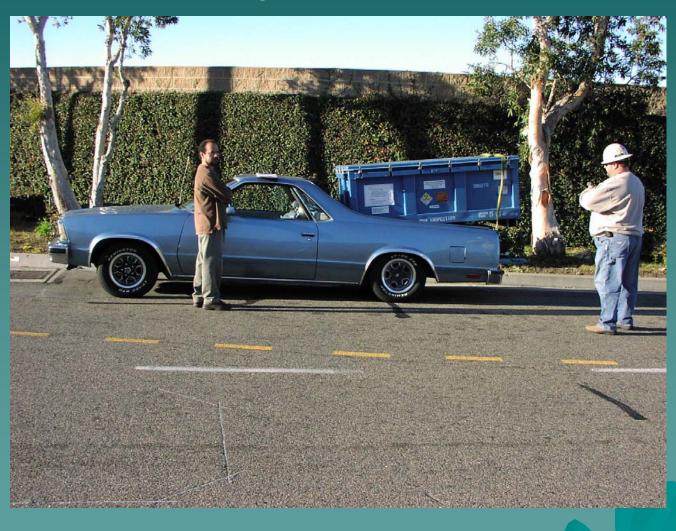
2007 Detroit Tanker Fire



Part 177 – Carriage by Public Highway



Transportation by Highway Part 177



Part 177 – Carriage by Public Highway

- Requirements applicable to the acceptance and transportation of hazardous materials by private, common, or contract carriers by motor vehicle.
- "...each carrier, including a connecting carrier, shall perform the duties specified and comply with all applicable requirements in this part..." (172.800(b))

Unacceptable Shipments 177.801

No person may accept or transport by motor vehicle a hazardous material that is not prepared in accordance with the requirements of this <u>subchapter</u>.

Compliance with FMCSR 177.804

- Motor carriers subject to this part shall comply with 49 CFR parts 390 through 397 (FMCSR) to the extent those regulations apply.
- ◆ FMCSR: Federal Motor Carrier Safety Regulations

Training – 177.800 & 177.816

◆ A carrier may not transport a hazardous material by motor vehicle unless each of its hazmat employees involved in that transportation is trained as required by this part and subpart H of part 172.

Hazmat Training – Part 172 Subpart H

- A systematic program to ensure familiarity with this subchapter
- Able to recognize and identify hazardous materials
- Knowledge of specific requirements applicable to functions performed by employee
- Emergency response/self-protection measures

Hazmat Training – Part 172 Subpart H

Definition of hazmat employer

Definition of hazmat employee

 Training may be provided by the hazmat employer <u>or</u> other public <u>or</u> private source

Hazmat Training – Part 172 Subpart H

- General awareness/familiarization training
- Function-specific training
- Safety training
- Security awareness training
- In-depth security training

Hazmat Training – Part 172 Subpart H - Recordkeeping

- Hazmat employees name
- Most recent training completion date
- Description, copy or location of training materials
- Name and address of person providing the training
- Certification that employee has been trained and tested

Driver Training – 177.816

- Must train drivers in FMCSRs (Parts 390-397)
 - Pre-trip inspection
 - Use of vehicle controls and equipment
 - Operation of vehicle
 - Maneuvering tunnels, bridges, etc.
 - Loading and unloading, load securement
 - Attendance of vehicles, parking, smoking, routing, and INCIDENT REPORTING

Driver Training – 177.816(b)

- Cargo Tanks of any size and Portable Tanks of 1,000 gallons or more capacity
 - Emergency control features
 - Special vehicle handling characteristics (high center of gravity, fluid surge, etc.)
 - Loading and unloading procedures
 - Properties of HM being transported
 - -Part 180 tests for cargo tanks

Driver Training – 177.816(c)

- The training required by this section <u>may</u> be satisfied by compliance with the requirements for a CDL with a tank or hazmat endorsement
- Carrier must determine additional training requirements
- NOTE: 177.816 training must be done every 3 years – most CDLs are valid for more than 3 years, so the carrier must provide the training in the interim!



Shipping Papers 172.200-205

- ◆ Effective 01/01/2013
- Requires Identification Number to precede Shipping name:
 - <u>UN1203</u>, Gasoline, 3, <u>PG II</u>
- "I-SHP-TO-U"
 - ID Number; Shipping Name, Hazard Class, Packing Group;
 Total Quantity; Unit of Measure.
 - Emergency Response TX#; Emergency Response Information.

Shipping Papers Retention-177.817(f)

- Must retain paper or electronic copy at Principal Place of Business
- ◆ Hazardous Waste 3 years
- ◆ All other HM, Shipper 2 years
- ◆ All other HM, Carrier 1 year



Shipping Papers Retention—177.817(f)

- Documentation must include date of acceptance of shipment by carrier.
- May retain a single shipping paper, IF carrier also retains a record of each shipment made including shipping name, identification number, quantity transported, and date of shipment.

Shipping Papers – 177.817(a)

A person may not accept HM for transportation unless it complies with Part 172, unless excepted from shipping paper requirement.

 Subsequent carriers are not subject to Section 172.204 (shipper certification).

Shipping Papers – 177.817(b)

- Initial carriers are required to have shipping papers that include the shipper certification.
- Shipper certification is not required for:
 - Shipments entirely by private carrier
 - Shipments by cargo tank supplied by carrier
 - These exceptions don't apply to hazardous waste

Shipping Papers – 177.817(d) Accessibility

- Must be tabbed or appear first if with other shipping documents.
- Driver at vehicle controls:
 - Within reach with seat belt on <u>AND</u>
 readily visible to anyone entering vehicle; OR
 - In a holder mounted to the inside of the driver's door.

Shipping Papers – 177.817(d) Accessibility

Driver NOT at vehicle controls:

In a holder mounted to the inside of the driver's door; OR

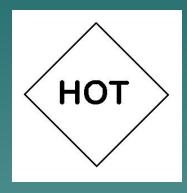
-On the driver's seat in the vehicle.

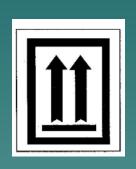
Shipping Papers – 177.817(f) Retention

- Documentation must include date of acceptance of shipment by carrier.
- May retain a single shipping paper, IF carrier also retains a record of each shipment made including shipping name, identification number, quantity transported, and date of shipment.

"What we have here is a failure to communicate."

Markings







- ◆ Labels
 - Generally for packages







- Placards
 - Generally for vehicles





Part 172 Placarding Requirements

- Table 1 any quantity (1.1-1.3, 2.3, 4.3, 6.1 PIH Zone A or B, 7 Yellow III or exclusive use LSA/SCO)
- ◆ Table 2 All Others
 - More than 1,000 lbs. aggregate;
 - Bulk Packages (119 gallons capacity); OR
 - Subsidiary Hazards identified in 172.505 (PIH materials; Radioactive and Corrosive;
 Dangerous When Wet).
- ◆ Exceptions: 172.504(f)

- Non-Bulk packages, two or more categories from Table
 2
- Less than 2,205 lbs.
 loaded at one facility
- Dangerous Placard is Optional, never mandatory



- ♦ 600 lbs. Class 3
- ♦ 600 lbs. Class 8





OR



- ♦ 600 lbs. Division 2.3
- ♦ 5,500 lbs. Class 3
- ♦ 600 lbs. Class 8







OR







- 600 lbs. Division4.3
- ◆ 2,000 lbs. Class 3
- ◆ 1,500 lbs. Div. 4.1







OR





Placarding Display 172.516

- Each placard must be clearly visible from the direction it faces, except from the direction of another transport vehicle to which the motor vehicle is coupled.
- ◆ The required placarding of the front of a motor vehicle may be on the front of a truck-tractor <u>instead of or in addition</u> to the placarding on the front of the cargo body.

Diesel Fuel 173.150(f)

- ◆ If authorized, flammable liquids not meeting the definition of any other hazard class that have a flashpoint above 100° may be reclassified as a Combustible Liquid.
- ◆ When transported by highway, combustible liquids in non-bulk packages are not regulated under the FHMR.
- ◆ A non-bulk package has a capacity of less than 119 gallons (per package).



Diesel Fuel 173.150(f)

- When transported by highway in a bulk package (<u>capacity</u> of 119 gallons or more), the following requirements apply:
 - Shipping papers, including ER information
 - Marking, including ID #s
 - Placarding
 - Reporting Incidents
 - Training, including security awareness (not in-depth)
 - Sections 173.1, 173.21, 173.24, 173.24a, 173.24b, 177.804, 177.817, 177.834(j), and 177.837(d)
- Also subject to PHMSA HM Registration
- Also subject to Insurance requirements of Part 387
- Security Plan is NOT Required

Materials of Trade (MOTs) 173.6

- ◆ 171.8: HM that is transported
 - For the purpose of protecting the health/safety of driver/passengers;
 - For the purpose of supporting the operation/maintenance of the vehicle or auxiliary equipment; or
 - By a private motor carrier in direct support of a principal business that is other than highway transportation.
 - ◆Examples: Hardware stores, auto parts stores, manufacturing companies, etc.

Materials of Trade (MOTs) 173.6

- ◆ Limited to certain quantities of certain hazard classes
- Gasoline: 8 gallon containers
- ◆ Cylinders: 220 lbs. maximum
- ◆ Maximum HM per vehicle: 440 lbs.
- ◆ Self-Reactives, PIH and HW not eligible
- Driver must be informed of requirements
- Other than cylinders, non-specification packages are authorized



Vehicles and Engines 173.220

◆ Generally, batteries and fuel in tanks of engines that are being transported are subject to the FHMR.

◆ This section excepts batteries and fuel in tanks of engines and vehicles from the FHMR when transported by highway. (173.220(g))

Security Plans 172.800

- ♦ Who Needs One See 172.800
- Large Bulk Quantity: 792 gallons
- ◆ Anyone directly involved in Plan must be trained (172.704(a)(5)); training must occur every 3 years or anytime Plan is changed. Plan must include a Training Plan for employees affected.
- Risk Assessment must be site-specific for each facility, and must be included in plan.
- Plan must be written, in English, and reviewed annually.
- Company must identify in Plan the responsible senior management official and the security duties of each position or department.
- Copy must be retained on site and made available for inspection.

Security Plan Elements

- ◆ SSI Marking 49 CFR 1520.13
- ◆ Site Specific Risk Assessment
- Required Topics:
 - En-route
 - Personnel
 - Unauthorized Access
 - Training Plan
- Annual Review notation
- Senior Management Official by job title
- Security duties of each department/position





- ◆ Texting:
 - 392.80 prohibits all drivers from texting while operating a CMV in interstate commerce; includes CDL disqualification
 - 177.804(b) applies Section 392.80 to all vehicles transporting placardable quantities.
- ◆ Cell Phone Restrictions:
 - PHMSA NPRM HM-256A

Insurance 387.9

- ◆ MUST be on the DOT MCS-90 form. For HM, it's required for private and for-hire carriers.
- ◆ Applies to all HM listed in the HM Table of the FHMR, even if excepted from the FHMR.
 - Diesel fuel in non-bulk packages
 - Fuel, batteries in vehicles and equipment being transported
 - Materials that are covered under MOTs

Insurance 387.9

- ♦ \$5 Million
 - Division 1.1, 1.2, 1.3; hazardous substances or Division 2.1 or
 2.2 materials in tanks over 3,500 gallons; PIH Hazard Zone A
 (2.3 or 6.1); HRCQ Class 7 materials.
- ◆ \$1 Million, vehicles over 10,000 lbs., interstate
 - Any hazardous waste, hazardous substance, or hazardous material not covered by the \$5 Million requirement.

Movement of Vehicles – 177.823

Can move unmarked/placarded vehicle in emergency, escorted, or with permission from USDOT.

Leaking cargo tanks may be moved only the minimum distance necessary.

Loading and Unloading 177.834(a)

Any package containing any hazardous material, not permanently attached to the motor vehicle, must be secured against shifting, including relative motion between packages, within the vehicle on which it is being transported, under conditions normally incident to transportation

Loading and Unloading 177.834(b)

 Each package containing a hazardous material bearing a package orientation marking must be loaded on a transport vehicle or within a freight container in accordance with such markings and must remain in the correct position indicated by the markings during transportation

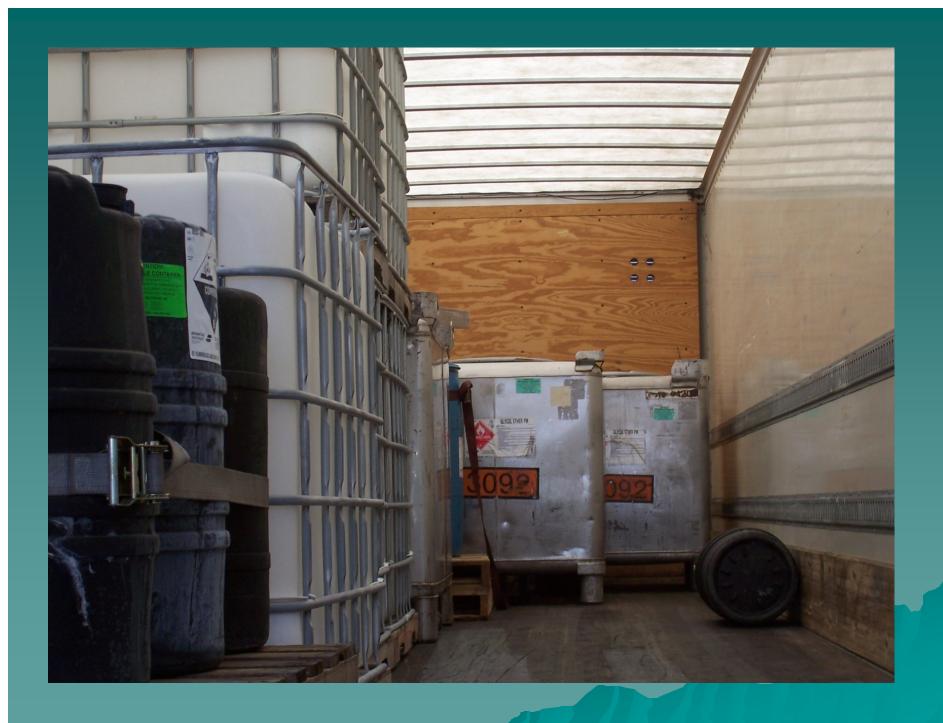
Loading and Unloading 177.834

- (c) No Smoking loading/unloading
- (d) Keep Fire Away
- (e) Handbrake Set
- (f) Use of Tools
- (h) Fueling Road Units
- (i) Cargo Tank Attendance
- (I) Use of Cargo Heaters
- (m) Rail Tanks on Highway
- (n) Can't stack DOT portable tanks
- (o) Unloading Portable Tanks

Loading and Unloading 177.834(j)

- A person may not drive a cargo tank motor vehicle containing a hazardous material regardless of quantity unless:
 - All manhole closures are closed and secured
 - All valves and other closures in liquid discharge system are closed and free of leaks

Section 173.29(b)(2) allows cargo tanks that have been cleaned and purged to be transported with open manhole closures.

















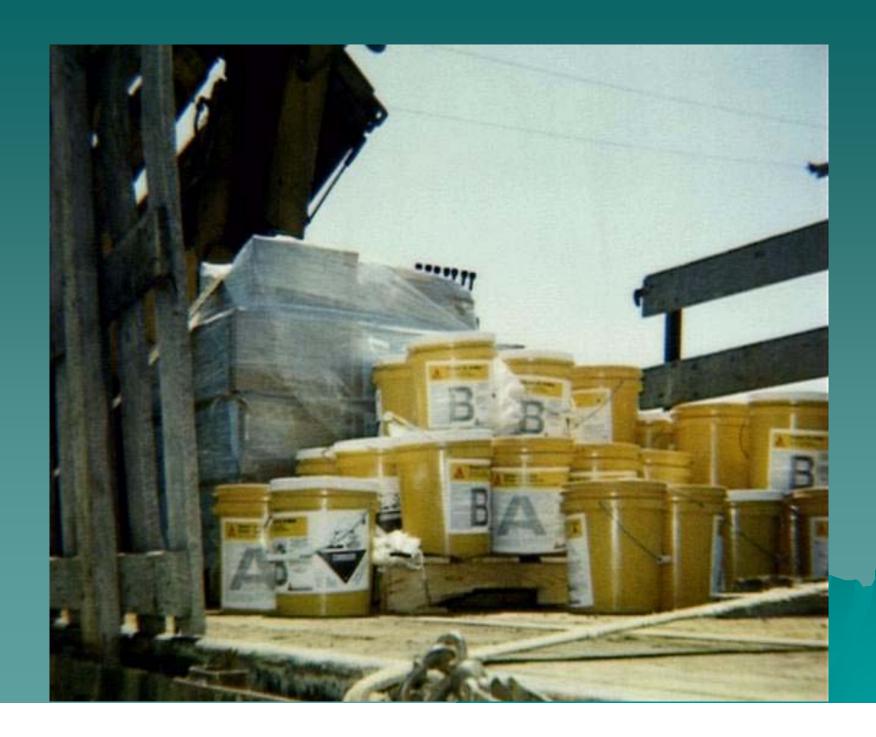




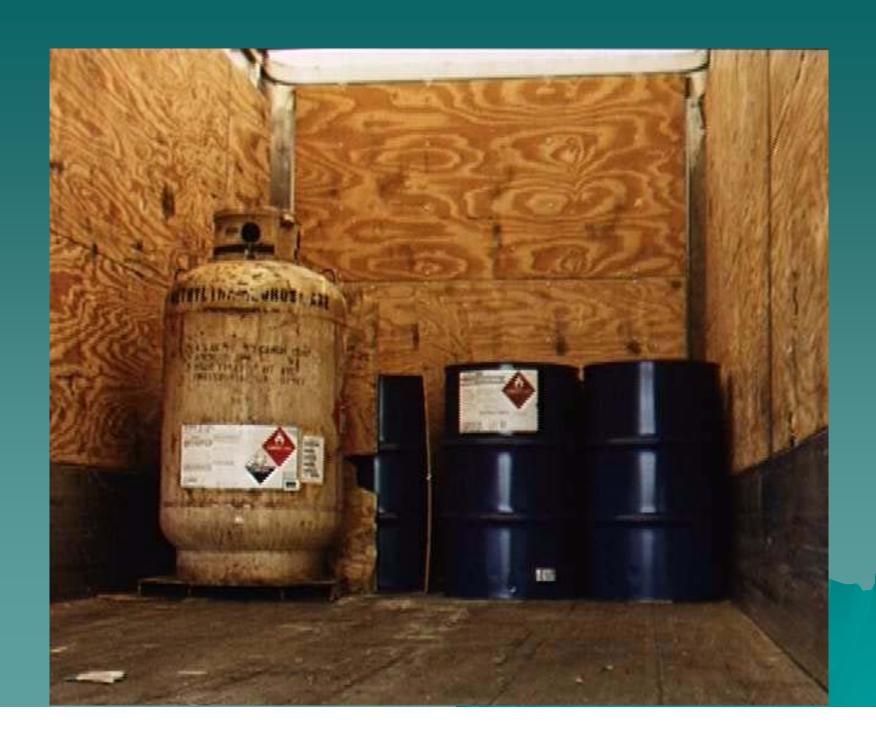












What it should look like...



Thou Shall Not Leak... 173.24(b)(1)



Class-Specific Provisions

- ◆ 177.835 Class 1
- ◆ 177.837 Class 3
- ◆ 177.838 Class 4 and Class 5
- ◆ 177.839 Class 8
- ◆ 177.840 Class 2
- ◆ 177.841 Divisions 6.1 and 2.3
- ◆ 177.842 and 843 Class 7

Segregation of Hazardous Materials – 177.848

This section applies to Hazardous Materials that are in packages that require Labels. **MUST include** subsidiary labels!



Segregation of Hazardous Materials – 177.848

- Identify the hazard class of material
 1 in left column of table
- Identify the hazard class of material2 in the top row of the table
- Find intersecting point
- Refer to key and determine applicable requirement

SEGREGATION TABLE FOR HAZARDOUS MATERIALS

Class or division	Notes	1.1	1.3	1.4	1.5	1.6	2.1	2.2	2.3 gas Zone A	2.3 gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 liquids PG 1 Zone A	7	8 liquids only
Explosives 1.1 and	A		•		٠		Х	X	X	х	Х	Х	X	X	х	Х	Х	Х	X
1.2							v		U	v	ļ			V	Х	Х	x		v
Explosives 1.3		,					X		X	X	X		X	X	^	^	0.00		ô
Explosives 1.4						,	0		100	O X	O	X	Q X	X	X	X	O X	x	X
Very insensitive explosives 1.5							Х	Х	X	^	\ \	X	Α	^	^	^	^	^	^
Extremely insensitive ex- 1.6 plosives.		Ĺ								0.00							W.2.W.	200730	
Flammable gases 2.1		X	X	0	X				X	0							0	0	
Non-toxic, non-flammable 2.2 gases.		Х			X														
Poisonous gas Zone A 2.3		X	X	0	X		X				X	X	X	X	X	X			X
Poisonous gas Zone B 2.3		X	X	0	X		0				0	0	0	0	0	0	MANAGE .		0
Flammable liquids 3		X	X	0	X				X	0					0		X		
Flammable solids 4.1		X			X				X	0							X		0
Spontaneously combustible 4.2 materials.		X	Х	0	Х				Х	0							X		X
Dangerous when wet 4.3 materials.		Х	X		X				×	0							Х		0
Oxidizers 5.1	A	X	X		X				X	0	0						X		0
Organic peroxides 5.2		X	X		X				X	0							X		0
Poisonous liquids PG I 6.1 zone A.		Х	×	0	×		0		10000		Х	X	X	X	Х	Х			X
Radioactive materials 7		X			X		0							10100	9541	2000			
Corrosive liquids 8		X	X	0	X		100		X	0		0	X	0	0	0	X		

Segregation of Hazardous Materials – 177.848

 Symbols are used to indicate requirements.

X = Materials may not be stored together

O = Materials may be stored with restrictions

* = Explosive

A = Ammonium Nitrate Fertilizer

Blank = No restrictions

Additional Highway Provisions

 177.854 Disabled vehicles and broken or leaking packages

177.870 HM in Passenger Carrying Vehicles

HM Safety Permits

 Separate from PHMSA's HM Registration Program

FMCSA Program

High risk materials

HM Safety Permits

More than 55 lbs of a 1.1, 1.2, or 1.3 or an amount of 1.5 material requiring placarding

PIH Division 2.3 or 6.1 material

Zone A – package > 1 liter

Zone B – Bulk package

Zone C&D – Bulk pkg >3500 gallons

HM Safety Permits

- Compressed or refrigerated liquid methane or natural gas or other liquefied gas:
 - with a methane content of at least 85%
 - and in a bulk package greater than 3500 gallons
- Class 7 Highway Route Controlled Quantities (HRCQ)

Who Needs a HMSP: 385.403

Applies to:

Interstate carriers

◆ Intrastate carriers

Foreign domiciled carriers

How do I get a HMSP: 385.407

- The motor carrier must file an application on form MCS-150B (www.fmcsa.dot.gov)
- The motor carrier must:
 - Have a "Satisfactory" safety rating assigned by FMCSA.
 - Have a crash rate in the lower 70% of the national average as indicated by FMCSA data.
 - Have a driver, vehicle, hazardous material and total outof-service rate in the lower 70% of the national average as indicated by FMCSA data.
 - Have a Security plan and train all HM employees in security awareness and in depth security.
 - Develop a Communications plan.
 - Be registered with USDOT/PHMSA.

How do I get a HMSP: 385.407

- Permit is effective for two years, then renew (385.419).
- Carriers must provide HMSP # to shippers upon request (385.417).
- Shippers required to ask for HMSP # (173.22(b)).
- Denials, suspensions, revocations.

Temporary Permits: 385.409

- Temporary Permits may be issued to motor carriers that do not have a safety rating until a compliance review can be completed.
- ◆ Temporary Permits will not be issued to carriers that do not have a security plan; have a crash rate in the top 30% of the national average; or have an Out-Of-Service rate above 30%.
- Temporary Permits are valid for 180 days, but may be extended.

What Else: 385.413

- Carriers must carry a copy of permit in each vehicle.
- ◆ Carriers transporting Class 7 or Division 1.1 – 1.3 materials must have a written route plan and the telephone number of the motor carrier representative who is familiar with the route.
- Carriers transporting Class 7 materials must have a Level VI inspection prior to movement.

What Else: 385.413

- Driver must comply with communications plan and maintain communications log for 6 months after shipment.
- Log must contain the name of the driver, ID of the vehicle, permitted material(s) and the date, location, and time of each contact.
- May be phone calls, radio calls, or electronic communications.
- The plan must require contact from the driver at the beginning and end of each duty tour, and at the pickup and delivery of each permitted load.

Denials of HMSP: 385.421

- + HMSP applications or renewals will be denied/suspended when:
 - The carrier does not submit a MCS-150B;
 - The carrier has a less than Satisfactory safety rating;
 - The carrier fails to maintain a satisfactory security plan;
 - The carrier fails to comply with the regulations in a manner that shows the carrier is unfit to have a permit;
 - The carrier fails to comply with an Out-Of-Service Order;
 - The carrier fails to maintain the minimum levels of financial responsibility;
 - The carrier fails to maintain PHMSA HM registration;
 - The carrier fails to maintain its operating authority, has its registration suspended or fails to pay a penalty.

FMCSR - Part 397

 Rule applies to each motor carrier engaged in transportation of hazardous materials by a motor vehicle which is required to be marked or placarded

FMCSR – Part 397

◆ Class 1.1 – 1.3: See 397.5, 397.7 and 397.19

- ◆ 397.11 Fires
- 397.15 Fueling Vehicles
- ◆ 397.17 Tires
- 397.67 and 397.101 Highway Routing

Smoking 397.13

- Applies to any person, driving or not – within 25 feet
- Class/Division 1, 2.1, 3, 4.1, 4.2,5 materials; or
- An empty Cargo Tank (not purged) that contained a Class/Division 2.1 or 3 material.

For Further Information and copies of rulemakings please see the following:

◆ FMCSA website at http://www.fmcsa.dot.gov

PHMSA website at http://phmsa.dot.gov/hazmat





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